

We claim:

1. A method for the inducible expression of a heterologous nucleic acid molecule comprising:
  - a) providing a host cell having a genome comprising:
    - i) a *yhcS* regulator gene responsive to an aromatic carboxylic acid inducer;
    - ii) a promoter region, responsive to expression of the *yhcS* regulator gene; and
    - iii) at least one heterologous nucleic acid molecule;
 wherein the at least one heterologous nucleic acid molecule is operably linked to the promoter region;
  - b) contacting the host cell of (a) with an aromatic carboxylic acid inducer wherein the at least one heterologous nucleic acid molecule is expressed.
2. A method according to Claim 1 wherein the at least one heterologous nucleic acid molecule encodes at least one protein.
3. A method according to Claim 2 wherein the at least one protein is part of an enzymatic biosynthetic pathway producing a product selected from the group consisting of isoprenoids, terpenoids, tetrapyrroles, polyketides, vitamins, amino acids, fatty acids, proteins, nucleic acids, carbohydrates, antimicrobial agents, and anticancer agents.
4. A method according to claim 1 wherein the at least one heterologous nucleic acid molecule encodes a reporter.
5. A method according to Claim 4 wherein the reporter is selected from the group consisting of luxCDABE, bgaB, cat, dsRed, galK, gfp, lacZ, luc, luxAB, nptII, phoA, uidA, and xylE.
6. A method according to Claim 1 wherein the aromatic carboxylic acid inducer is selected from the group consisting of para-hydroxybenzoic acid, para-hydroxycinnamic acid, cinnamic acid, salicylic acid, benzoic acid, and 1-napthoic acid.

7. A method according to Claim 1 wherein the promoter region, responsive to expression of the *yhcS* regulator gene is promoter region isolated from the *yhcRQR* operon.
- 5 8. A method according to Claim 1 wherein the host cell is an enteric bacteria.
9. A method according to Claim 1 wherein the host cell is selected from the group of genera consisting of *Escherichia*, *Salmonella*, *Bacillus*,  
10 *Acinetobacter*, *Streptomyces*, *Methylobacter*, *Rhodococcus*, *Corynebacterium*, *Pseudomonas*, *Rhodobacter*, and *Synechocystis*.
10. A method for the inducible expression of a heterologous nucleic acid molecule comprising:
- 15 a) providing an enteric bacterial host cell having a genome comprising:
- i) a *yhcS* regulator gene responsive to an aromatic carboxylic acid inducer;
  - ii) a promoter region, responsive to expression of the *yhcS* regulator gene; and
  - 20 iii) at least one heterologous nucleic acid molecule;
- wherein the at least one heterologous nucleic acid molecule is operably linked to the promoter region;
- b) contacting the host cell of (a) with an aromatic carboxylic acid inducer wherein the at least one heterologous nucleic acid molecule is  
25 expressed.
11. A method according to Claim 10 wherein the *yhcS* regulator gene responsive to an aromatic carboxylic acid inducer is an isolated nucleic acid molecule selected from the group consisting of:
- 30 a) an isolated nucleic acid molecule comprising nucleic acid sequence SEQ ID NO:1; and
- b) an isolated nucleic acid molecule, which hybridizes to SEQ ID NO:1 after being washed with 0.1×SSC, 0.1% SDS at 65°C and washed with 2×SSC, 0.1% SDS followed by a second wash in  
35 0.2×SSC, 0.1% SDS.

12. A method according to Claim 10 wherein the promoter region, responsive to expression of the *yhcS* regulator gene is an isolated nucleic acid molecule selected from the group consisting of:
- a) an isolated nucleic acid molecule comprising nucleic acid sequence SEQ ID NO:3; and
  - b) an isolated nucleic acid molecule, which hybridizes to SEQ ID NO:3 after being washed with 0.1×SSC, 0.1% SDS at 65°C and washed with 2×SSC, 0.1% SDS followed by a second wash in 0.2×SSC, 0.1% SDS.
13. A method according to Claim 10 wherein the enteric bacterial host cell is *E. coli*.
14. A host cell comprising:
- a) a *yhcS* regulator gene responsive to an aromatic carboxylic acid inducer having a nucleic acid sequence selected from the group consisting of:
    - i) an isolated nucleic acid molecule comprising nucleic acid sequence SEQ ID NO:1; and
    - ii) an isolated nucleic acid molecule, which hybridizes to SEQ ID NO:1 after being washed with 0.1×SSC, 0.1% SDS at 65°C and washed with 2×SSC, 0.1% SDS followed by a second wash in 0.2×SSC, 0.1% SDS;
  - b) a promoter region, responsive to expression of the *yhcS* regulator gene having a nucleic acid sequence selected from the group consisting of:
    - i) an isolated nucleic acid molecule comprising nucleic acid sequence SEQ ID NO:3; and
    - ii) an isolated nucleic acid molecule, which hybridizes to SEQ ID NO:3 after being washed with 0.1×SSC, 0.1% SDS at 65°C and washed with 2×SSC, 0.1% SDS followed by a second wash in 0.2×SSC, 0.1% SDS; and
    - iii) at least one heterologous nucleic acid molecule;wherein the at least one heterologous nucleic acid molecule is operably linked to the promoter region.
15. The host cell of Claim 14 wherein the host cell is an enteric bacteria.

16. The host cell of Claim 14 wherein the at least one heterologous nucleic acid molecule encodes at least one protein.
- 5 17. The host cell of Claim 14 wherein the at least one heterologous nucleic acid encodes a reporter.
18. The host cell of Claim 14 wherein the reporter is selected from the group consisting of luxCDABE, bgaB, cat, dsRed, galK, gfp, lacZ, luc,  
10 luxAB, nptII, phoA, uidA, and xylE.
19. The host cell of Claim 16 wherein the at least one protein is part of an enzymatic biosynthetic pathway producing a product selected from the group consisting of isoprenoids, terpenoids, tetrapyrroles, polyketides,  
15 vitamins, amino acids, fatty acids, proteins, nucleic acids, carbohydrates, antimicrobial agents, and anticancer agents.